

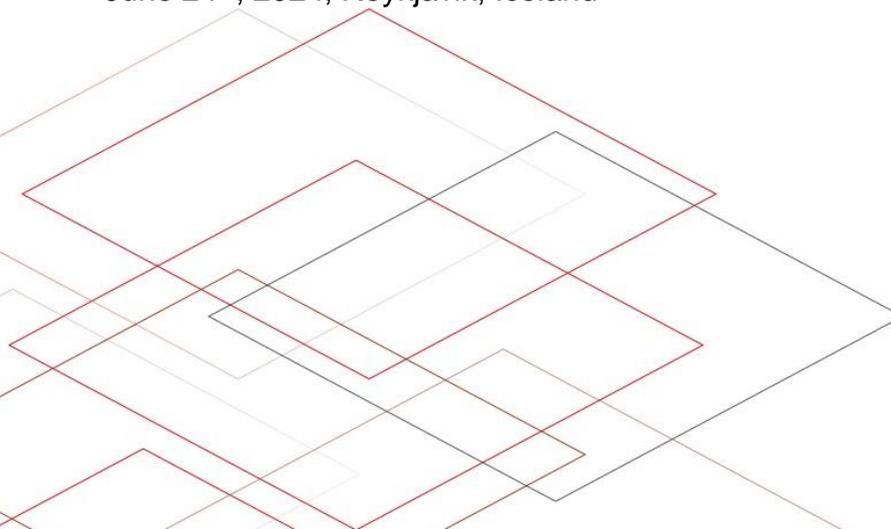
Summary, Reflection, and Closing

Oliver Karras, Alessio Ferrari, Davide Fucci, and Davide Dell'Anna

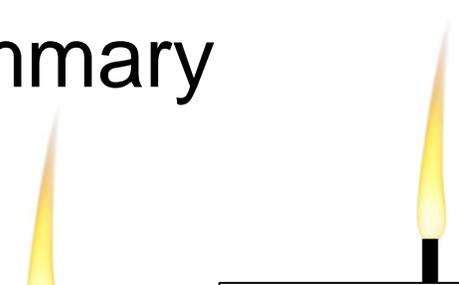
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Summary



Mining User Requirements from Application Store Reviews Using Frame Semantics

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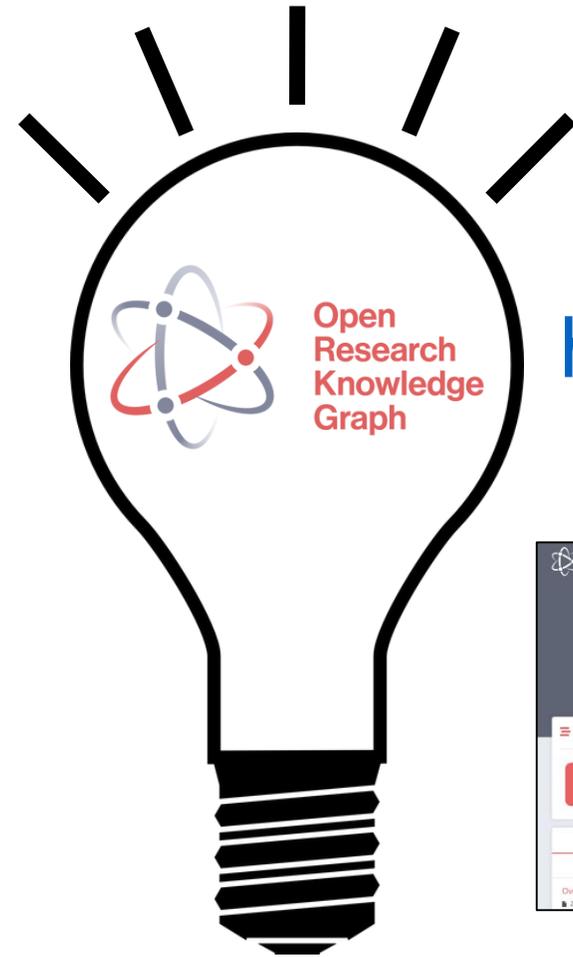
Abstract. Context and motivation: Research on mining user reviews in mobile application (app) stores has noticeably advanced in the past few years. The majority of the proposed techniques rely on classifying the textual description of user reviews into different categories of technically informative user requirements and uninformative feedback. **Question/Problem:** Relying on the textual attributes of reviews often produces high dimensional models. This increases the complexity of the classifier and can lead to overfitting problems. **Principal idea/solution:** We propose a novel semantic approach for app review classification. The proposed approach is based on the notion of semantic role labeling, or characterizing the lexical meaning of text in terms of semantic frames. Semantic frames help to generalize from text (individual words) to more abstract scenarios (contexts). This reduces the dimensionality of the data and enhances the predictive capabilities of the classifier. Three datasets of user reviews are used to conduct our experimental analysis. Results show that semantic frames can be used to generate lower dimensional and more accurate models in comparison to text classification methods. **Contribution:** A novel semantic approach for extracting user requirements from app reviews. The proposed approach enables a more efficient classification process and reduces the chance of overfitting.

Keywords: Requirements elicitation · Application stores · Classification

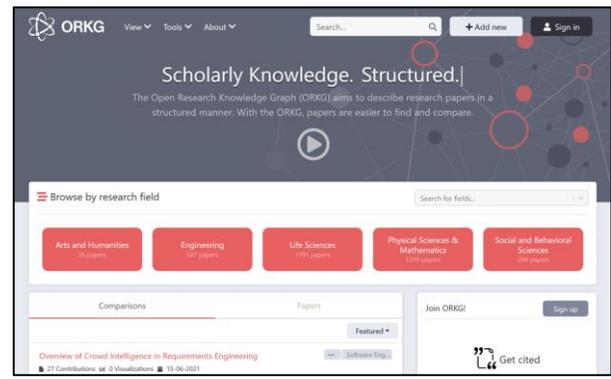
1 Introduction

Mobile application markets, or app stores (e.g., Google Play and Apple App Store), represent a unique model of service-oriented business. Such platforms have created an unprecedented opportunity for app developers to directly monitor the opinions of a large population of end-users of their software [2]. Through app stores feedback services, app users can directly share their experience in the form of textual reviews and meta-data (e.g., star ratings). Analyzing large datasets of app store reviews has revealed that they contain substantial amounts of up-to-date technical information. Such information can be leveraged by app developers to help them maintain and sustain their apps in a highly-competitive

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<https://orkg.org>



Let's bring scholarly communication and open science in Requirements Engineering to the 21st century!

Recap of the Tutorial

Session	Time	Table of Content	Style	Speaker
Theoretical	09:00 - 09:25	1. Welcome (5 min) 2. Introduction to open science in RE (10 min) 3. Introduction to the ORKG (10 min)	Presentation Presentation Presentation	All organizers Alessio Ferrari Oliver Karras
Practical	09:25 - 10:15	4. Create a FAIR-annotated publication for the ORKG (50 min) 4.1 Set up an Overleaf project for an exemplary publication 4.2 Use the LaTeX package SciKGT _E X to annotate the publication 4.3 Generate PDF with embedded FAIR scientific information 4.4 Optional: Upload the FAIR-annotated publication to the ORKG	Exercise Sub-exercise Sub-exercise Sub-exercise Sub-exercise	Oliver Karras All organizers All organizers All organizers All organizers
Break	10:15 - 10:45	Coffee break		
Practical	10:45 - 11:45	5. Use the ORKG based on a RE use case (60 min) 5.1 Add an exemplary publication to the ORKG 5.2 Describe the scientific information of the publication in the ORKG 5.3 Create an ORKG comparison of the publications added by participants 5.4 Publish the created ORKG comparison as a citable digital artifact 5.5 Optional: Create visualizations for the created ORKG comparison 5.6 Optional: Retrieve the information with the SPARQL endpoint	Exercise Sub-exercise Sub-exercise Sub-exercise Sub-exercise Sub-exercise Sub-exercise	Oliver Karras All organizers All organizers All organizers All organizers All organizers All organizers
Feedback	11:45 - 12:15	6. Reflection of the tutorial with the participants (25 min) 7. Farewell and closing (5 min)	Discussion Presentation	All organizers All organizers

Reflection and Feedback

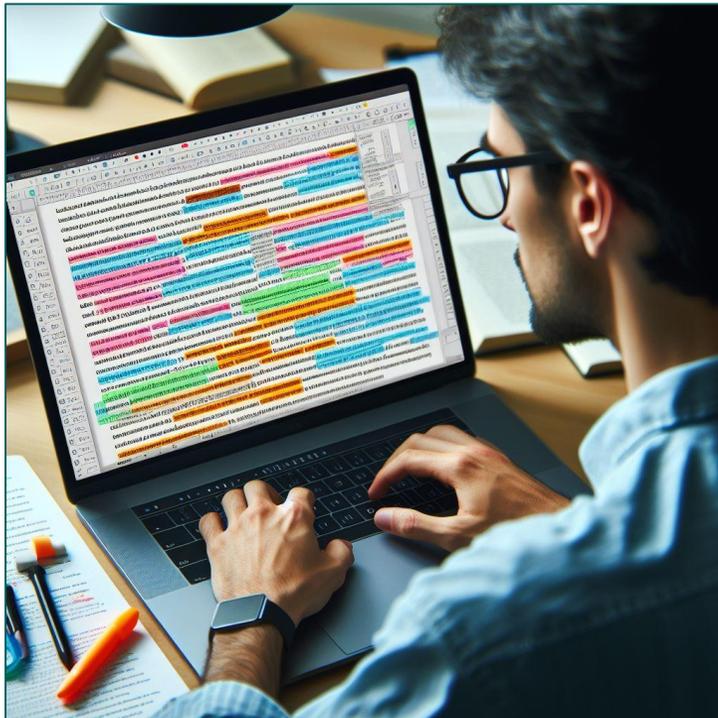
Your thoughts, please!

Teaser: REFSQ'25 Open Science Competition

Challenge 1:

Annotate your REFSQ'25 paper with SciKGTeX.

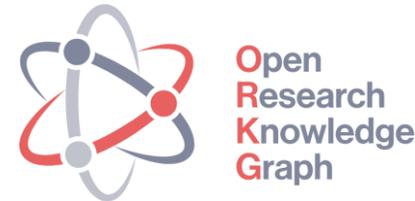
The accepted paper, best annotated with SciKGTeX, will be awarded the **Best ORKG Annotation Award** (prize: 100€).



Challenge 2:

Enrich your RESFQ'25 paper with an ORKG comparison.

The accepted paper, enriched with the best ORKG comparison, will be awarded the **Best ORKG Comparison Award** (prize: 200€).



Divide and Conquer the EmpiRE:
A Community-Maintainable Knowledge Graph of
Empirical Research in Requirements Engineering

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A Comparison of Scientific Publications on the State of Empirical Research in Requirements Engineering and Software Engineering ★

November 2023 | Oliver Karas | Felix Wernlein | Jill Ann-Christin Klünder | Sören Auer

This comparison provides an overview of scientific publications that have investigated primary studies in requirements engineering and software engineering to give a snapshot of the "current" state of empirical research in requirements engineering and software engineering. In particular, the comparison shows for each publication (1) which research fields and topics were investigated, (2) whether and where the extracted and analyzed data is available, and (3) which method was used to determine the state, including further details about the respective method.

DOI: <https://doi.org/10.48366/RES0023>

Properties	Empirical research in requirements engineering: trends and opportunities - 2016	Empirical research methodologies and studies in Requirements Engineering: How far did we come? - 2014	A Survey on Empirical Requirements Engineering Research Practices - 2012	Evidence-Based Structuring and Evaluation of Empirical Research in Requirements Engineering: Fundamentals, Framework, Research Map - 2010	An Anal. Requires Data - Empirical
research problem	empirical research in requirements engineering	empirical research in requirements engineering	empirical research in requirements engineering	empirical research in requirements engineering	empirical
research field investigated	Requirements Engineering	Requirements Engineering	Requirements Engineering	Requirements Engineering	Req.
topic investigated	bibliographic metadata context data collection	bibliographic metadata research topic theory	context data analysis data collection	context research method result	

your personal use. Not for redistribution. The definitive version of record was published in the proceedings of 2023 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), <https://doi.org/10.1109/ESEM56168.2023.10304795>.

Looking to the Future: ORKG Ask

The screenshot shows the ORKG Ask website interface. At the top left is the ORKG Ask logo. Navigation links for 'Search' and 'My library' are visible. A 'Sign in' button is in the top right. The main heading reads 'Find research you are *actually* looking for'. Below this is a search bar with the placeholder text 'Ask your question...'. A descriptive box states: 'ORKG Ask is a scholarly search and exploration system powered by **Vector Search, Large Language Models** and **Knowledge Graphs**.' To the right, a box displays '76.430.670 Papers'. A 'Getting started' section lists five research questions in red text: 'What are the long-term effects of income inequality on community well-being?', 'What role does trust play in building resilient communities?', 'What are the ethical implications of using artificial intelligence in decision-making processes?', 'What is the significance of higher-dimensional algebra?', and 'What are the social implications of widespread adoption of autonomous vehicles?'. Below this is a section 'ORKG Ask is brought to you by' featuring the EULIST logo. The footer contains links for 'Contact', 'Data Protection', 'Accessibility', 'Imprint', 'Changelog', and 'Version: 1.6.0'.

The ORKG Ask is a scientific **search and exploration system** that helps researchers **find** the **research articles** they are really looking for.

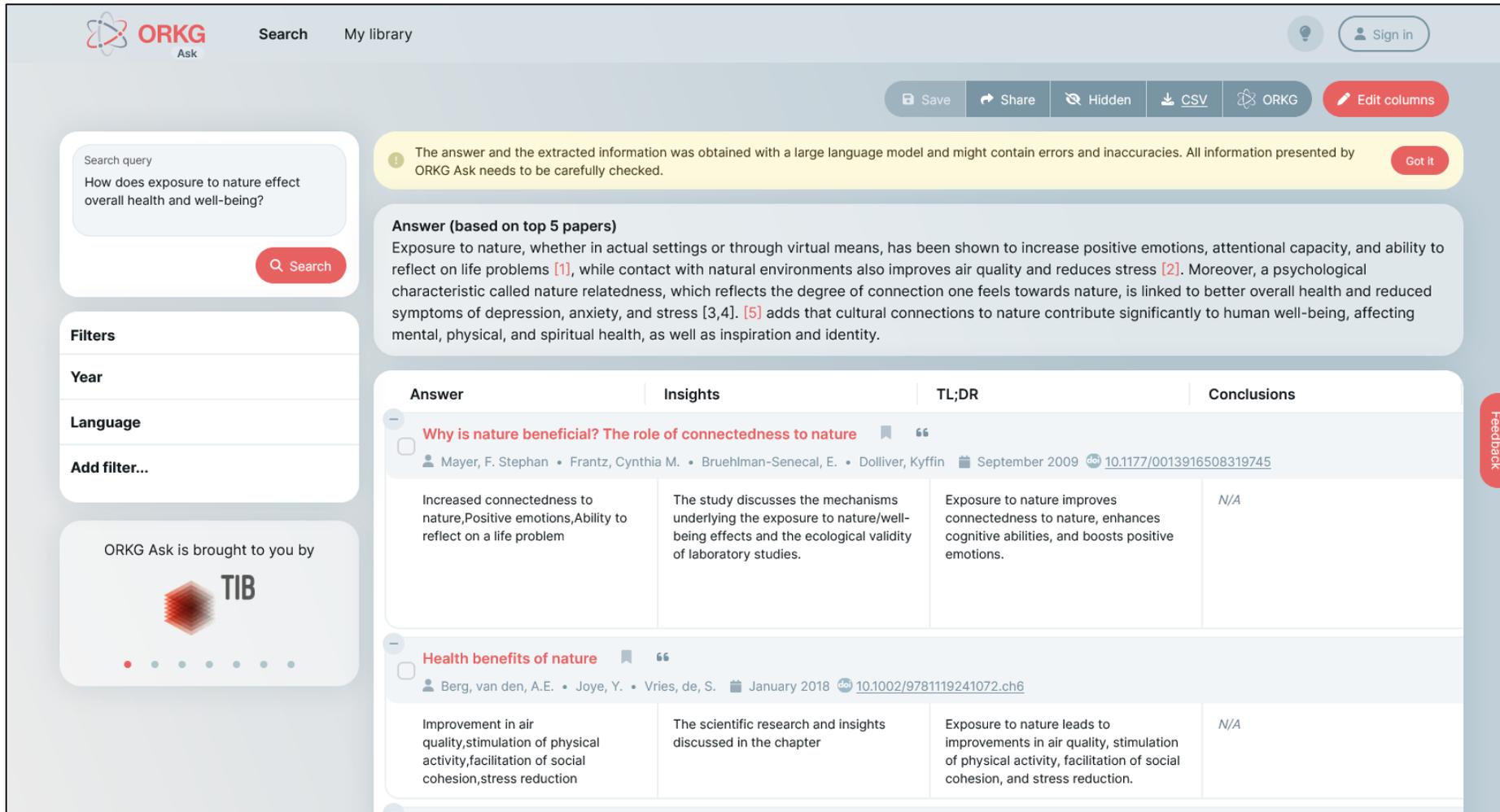
Ask a **question**.

Get an **answer** with **references**.

<https://ask.orkg.org/>

(Released: May16th, 2024)

Looking to the Future: ORKG Ask



Search query: How does exposure to nature effect overall health and well-being?

Filters: Year, Language, Add filter...

Warning: The answer and the extracted information was obtained with a large language model and might contain errors and inaccuracies. All information presented by ORKG Ask needs to be carefully checked.

Answer (based on top 5 papers): Exposure to nature, whether in actual settings or through virtual means, has been shown to increase positive emotions, attentional capacity, and ability to reflect on life problems [1], while contact with natural environments also improves air quality and reduces stress [2]. Moreover, a psychological characteristic called nature relatedness, which reflects the degree of connection one feels towards nature, is linked to better overall health and reduced symptoms of depression, anxiety, and stress [3,4]. [5] adds that cultural connections to nature contribute significantly to human well-being, affecting mental, physical, and spiritual health, as well as inspiration and identity.

Answer	Insights	TL;DR	Conclusions
<p>Why is nature beneficial? The role of connectedness to nature</p> <p>Mayer, F. Stephan • Frantz, Cynthia M. • Bruehlman-Senecal, E. • Dolliver, Kyffin • September 2009 • 10.1177/0013916508319745</p> <p>Increased connectedness to nature, Positive emotions, Ability to reflect on a life problem</p>	<p>The study discusses the mechanisms underlying the exposure to nature/well-being effects and the ecological validity of laboratory studies.</p>	<p>Exposure to nature improves connectedness to nature, enhances cognitive abilities, and boosts positive emotions.</p>	N/A
<p>Health benefits of nature</p> <p>Berg, van den, A.E. • Joye, Y. • Vries, de, S. • January 2018 • 10.1002/9781119241072.ch6</p> <p>Improvement in air quality, stimulation of physical activity, facilitation of social cohesion, stress reduction</p>	<p>The scientific research and insights discussed in the chapter</p>	<p>Exposure to nature leads to improvements in air quality, stimulation of physical activity, facilitation of social cohesion, and stress reduction.</p>	N/A

1. Enter a natural language **question** in the **UI**
2. **Semantic search** finds the most relevant **papers**
3. **LLMs** extract the required information and create the **answer**
4. **KGs** are used to **support** content extraction, synthesis, and enhancement